

WHAT IS CLAIMED IS:

1. A ceramic member, wherein crystal grains are formed on the surfaces thereof with a plurality of protrusions having smaller diameter than that of the crystal grain, the crystal grain composing the surface or its vicinity of a dense ceramic base material of purity being 95 wt% or higher.

2. A method of producing a ceramic member, wherein a dense ceramic base material, having purity of 95 wt% or higher and exceeding 90% of a theoretical density, is performed on the surface thereof with a corrosion treatment in an acid etchant, whereby ceramic grains existing on the surface or its vicinity of the base material are formed on the surface thereof with a plurality of protrusions.

3. The method of producing the ceramic member as set forth in claim 2, wherein the dense ceramic base material is performed with an acid etching treatment by heating the acid etchant at temperature of 100°C or higher.

4. The method of producing the ceramic member as set forth in claim 2 or 3, wherein the acid etchant is a sulfuric acid or a water solution thereof, otherwise a phosphoric acid or a water solution thereof.

5. A surface rugged ceramic member, wherein a dense ceramics of purity being 95 wt% or higher is made as a base material, and a surface layer thereof has a rugged structure containing fine pores, which have diameter of 0.5 to 50 times of average grain diameters of the ceramics, with large diameter portions in a depth direction.

6. The surface rugged ceramic member as set forth in claim 5, wherein the dense base material has the purity of 99 wt% or higher.

7. The surface rugged ceramic member as set forth in claim 5 or 6,
5 wherein the dense base material is 90 wt% or higher of a theoretical density.

8. The surface rugged ceramic member as set forth in any one of claims 5 or 6, wherein the dense base material is alumina, yttrium aluminum garnet, aluminum nitride, yttria, zirconia, and calcium phosphate based ceramics.

9. A method of producing a surface rugged ceramic member, wherein a dense ceramic base material of purity being 95 wt% or higher and of more than 90% of a theoretical density is subjected to a corrosion treatment on the surface thereof in an acid etchant, so that the surface layer is rugged, having pore diameter of 0.5 to 50 times of average grain diameters of the ceramics and containing fine pores with large diameter portions in a depth direction.

10. The method of producing the surface rugged ceramic member as set forth in claim 9, wherein the acid etchant is heated in use.

11. The method of producing the surface rugged ceramic member as set forth in claim 9 or 10, wherein the acid etchant is pressurized with 0.2 MPa or higher.

12. The method of producing the surface rugged ceramic member as set forth in any one of claims 9 or 10, wherein the acid etchant is a water solution containing sulfuric acid or phosphoric acid.

13. The method of producing the surface rugged ceramic member as set forth in any one of claims 9 or 10, wherein the ceramic base material is carried out on the surface thereof with a heat treatment at temperatures of 2/3 or higher of a melting point of the ceramics after the corrosion treatment with the acid etchant.

14. A surface rugged ceramic member, wherein a dense ceramics is made a base material, purity of which is 95 wt% or higher and average grain diameters are 10 to 70 μm , a surface layer thereof within 5 times of the average grain diameters contains no pulverized layers, and said ceramics has a rugged structure which seems as grains partially fall.

15. The surface rugged ceramic member as set forth in claim 14, wherein the dense ceramic base material has the purity of 99 wt% or higher.

16. The surface rugged ceramic member as set forth in claim 14 or 15, wherein the dense ceramic base material comprises one kind or more of alumina, yttrium aluminum garnet, aluminum nitride, yttria, and zirconia.

17. A method of producing a surface rugged ceramic member, wherein a dense ceramic base material of purity being 95 wt% or higher and average grain diameters being 10 to 70 μm is subjected to a corrosion treatment on the surface thereof in an acid etchant, and while removing a pulverized layer from a ceramic processed surface, said ceramics has a rugged structure which seems as grains partially fall.

18. The method of producing the surface rugged ceramic member as set forth in claim 17, wherein the acid etchant is a water solution containing

sulfuric acid or phosphoric acid.

19. A chemical etching method of alumina ceramics, wherein alumina ceramics is immersed in a water solution of sulfuric acid of 18 to 50% density,
5 and the water solution is kept at temperatures of 100 to 230°C.